PATENT COOPERATION TREATY

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From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

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NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Rule 71.1)

Date of mailing *(day/month/year)*	25.11.2004
Applicant's or agent's file reference	**IMPORTANT NOTIFICATION**
M/42195-PCT	

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/EP 02/09657	29.08.2002	29.08.2002

Applicant
BASF AKTIENGESELLSCHAFT et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.

2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.

3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the international preliminary examining authority:	Authorized Officer
European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Ullrich, J Tel. +49 89 2399-8048

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PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

10/525796

Applicant's or agent's file reference M/42195-PCT	**FOR FURTHER ACTION**	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/EP 02/09657	International filing date *(day/month/year)* 29.08.2002	Priority date *(day/month/year)* 29.08.2002
International Patent Classification (IPC) or both national classification and IPC H01S3/16		
Applicant BASF AKTIENGESELLSCHAFT et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 4 sheets, including this cover sheet.

   ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 1 sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the opinion
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand 29.03.2004	Date of completion of this report 25.11.2004
Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Ousset, J-B Telephone No. +49 89 2399-8271

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/EP 02/09657

I. Basis of the report

1. With regard to the **elements** of the international application *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*:

Description, Pages

1-4, 6-48	as originally filed
5	received on 21.10.2004 with letter of 21.10.2004

Claims, Numbers

1-11	as originally filed

Drawings, Sheets

1, 2	as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

   These elements were available or furnished to this Authority in the following language: , which is:

   ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).

   ☐ the language of publication of the international application (under Rule 48.3(b)).

   ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

   ☐ contained in the international application in written form.

   ☐ filed together with the international application in computer readable form.

   ☐ furnished subsequently to this Authority in written form.

   ☐ furnished subsequently to this Authority in computer readable form.

   ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

   ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

   ☐ the description, pages:

   ☐ the claims, Nos.:

   ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	
	No:	Claims	1-11
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-11
Industrial applicability (IA)	Yes:	Claims	1-11
	No:	Claims	

2. Citations and explanations

see separate sheet

SECTION V

1). Relevant prior art is represented by:

D1: US-A-6 141 367 (FARIS SADEG MUSTAFA ET AL) 31 October 2000 (2000-10-31)

2). Even if the objection of lack of clarity is disregarded, claim 1 lacks novelty, since an identical laser gain medium is already disclosed in D1 (see claims 17,18, 28-31). The process used to make the solid cholesteric phase cannot distinguish this phase form the one described in D1.
The applicant fails to define the feature, which renders the current set of claims novel. Thus, the objection of lack of novelty is maintained.

3). D1 represents the closest prior art, since it deals with laser gain medium.

The problem underlying the current application appears to be the provision of a laser gain medium.

Since D1 describes the same laser, the skilled person does not need any inventive skills to copy the content of D1 to arrive at the claimed subject-matter.

Inventive step is not acknowledged.

4). The reason for the disclaimer has been noted.
The amendment proposed by the applicant concerning page 5 seems to be justified and does not add new subject-matter into the application as originally filed.

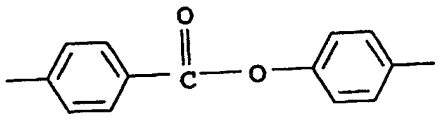
5). There is no objection with regard to industrial applicability.

c) at least one cholesteric, crosslinkable oligomer or polymer selected from the group comprising cholesteric cellulose derivatives, propargyl-terminated cholesteric polyesters or polycarbonates, crosslinkable oligo- or polyorganosiloxanes; or

d) crosslinkable cholesteric copolyisocyanates in a polymerizable diluent; or

e) chiral nematic polyesters having flexible chains whose cholesteric phase can be frozen in by rapid cooling to below the glass transition temperature,

wherein said mixtures b) do not comprise mixtures of an achiral, nematic, polymerizable monomer having a mesogenic group comprising



and a chiral cholesterylcarbonate and a crosslinking agent.

While the preferred gain medium of the invention comprises either one of mixtures a) to e), a suitable gain medium may also comprise mixtures of mixtures a) to e).

The production of cholesteric layers for gain media according to the invention offer a range of surprising advantages: The cholesteric helices, particularly of mixtures a) and b), can be oriented with particular advantage when dilute cholesteric solutions are used. Post-orientation of the cast (as yet unpolymerized and uncrosslinked) layer in order to align the cholesterics is often unnecessary. The cholesteric layers produced possess an extremely homogeneous layer thickness and can be produced in a reproducible manner. The invention makes cost-effective production of solid CLC laser gain media possible.

The cholesteric mixture is preferably applied with a diluent fraction of from about 5 to 95 % by weight, in particular from about 30 to 80 % by weight, preferably from about 40 to 70 % by weight and, with particular preference, from about 55 to 60 % by weight, based in each case on the overall weight of the mixture that is to be applied.